Ivan Montero

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Education _

University of Washington

M.Sc. Computer Science

- GPA: 3.98
- Advisor: Noah A. Smith

University of Washington

B.Sc. Computer Science

- GPA: 3.90
- Advisor: Noah A. Smith

Seattle, WA Sept. 2021 - June 2022

Seattle, WA Sept. 2017 - June 2021

Publications_

- Michael Hassid, Hao Peng, Daniel Rotem, Jungo Kasai, **Ivan Montero**, Noah A. Smith, Roy Schwartz, "How Much Does Attention Actually Attend? Questioning the Importance of Attention in Pretrained Transformers", In *Findings of the 2022 Conference on Empirical Methods in Natural Language Processing* (Findings of EMNLP), 2022. URL https://arxiv.org/abs/2211.03495/
- Ivan Montero, Nikolaos Pappas, Noah A. Smith, "Sentence Bottleneck Autoencoders from Transformer Language Models", In Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2021. Oral presentation. URL https://aclanthology.org/2021.emnlp-main.137/
- Ivan Montero, Shayne Longpre, Ni Lao, Andrew J. Frank, Christopher DuBois, "Pivot Through English: Reliably Answering Multilingual Questions without Document Retrieval", In Proceedings of the Workshop on Multilingual Information Access at the 2022 Conference of the North American Chapter of the Association for Computational Linguistics (MIA @ NAACL), 2022. URL https://aclanthology.org/2022.mia-1.3/
- Florian Mai, Nikolaos Pappas, **Ivan Montero**, Noah A. Smith, James Henderson, "Plug and Play Autoencoders for Conditional Text Generation", In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP), 2020. URL https://www.aclweb.org/anthology/2020.emnlp-main.491/

Professional Experience

Sept. 2022 - Present	Machine Learning Engineer, APPLE
	Question answering for Siri.
June 2021 - Sept. 2021	Research Intern, APPLE
	Open-domain question answering improvements through document-level representation learning.
Sept. 2020 - Dec. 2020	Software Engineering Intern, FACEBOOK
	Image understanding improvements to Photo Search on the Visual Search Relevance team.
June 2020 - Sept. 2020	Software Engineering Intern, GOOGLE
	Embedding retrieval optimizations on the Machine Learning Google Research team.
March 2020 - June 2020	Research Intern, APPLE
	Pivot Through English: Reliably Answering Multilingual Questions without Document Retrieval
Sept. 2019 - March 2020	Teaching Assistant, UNIVERSITY OF WASHINGTON
	Machine Learning (2x), Deep Learning, Natural Language Processing, and Computer Vision
June 2019 - Sept. 2019	Software Engineering Intern, GOOGLE
	Street View Billboard Detection And Physical Metric Inference on the Ads team.
June 2018 - Sept. 2018	Engineering Practicum Intern, GOOGLE
	Image Clustering Pipeline design/implementation on Image Understanding Google Research.

Teaching Experience_

- Spring 2022 Computer Vision, Teaching Assistant
- Winter 2022 Natural Language Processing, Teaching Assistant
- Autumn 2021 Deep Learning, Teaching Assistant
- Winter 2020 Machine Learning, Teaching Assistant
- Autumn 2019 Machine Learning, Teaching Assistant
- Spring 2019 Software Design and Implementation, Teaching Assistant

Research Experience

University of Washington - Noah's ARK

Advisor: Noah Smith, Mentors: Nikolaos Pappas (2019-2021), Hao Peng & Jungo Kasai (2021)

- Efficient Attention Distillation (2021) We modify the knowledge distillation framework, which learns a smaller student model from a larger teacher that achieves the same performance, to experiment with efficient linear attention variants in the student by explicitly matching the standard quadratic attention distribution of the teacher.
- Multilingual Embeddings from Monolingual Pretrained Transformers (2021) Explore using a fixed English BERT model with a new trainable embedding table to perform masked language modeling in a non-English language, and explore the extents of English representation transferability to other languages
- Sentence Bottleneck Autoencoders from Transformer Language Models (2021) Explore the construction of a sentence-level autoencoder from a pretrained, frozen transformer language model. The sentence representations discovered by our model achieve better quality than previous methods that extract representations from pretrained transformers on single-sentence similarity, generation, and classification tasks.
- Sequence Generation with Learnable Continuous Outputs (2020) Explore a sequence generation model with learnable target continuous outputs which leverages a word autoencoder to a avoid the computationally expensive softmax prediction layer.
- Plug and Play Autoencoders for Conditional Text Generation (2020) Explore a sequence-to-sequence framework that learns a task-specific continuous mapping between the latent representations of sequence autoencoders. Our pre-training of autoencoders reduces transfer learning for other NLP tasks to simply learning a continuous translation, leading to up to four times faster evaluation and more parameter-efficient training.

Apple – Siri Web Answers

Advisor: Chris DuBois, Mentors: Shayne Longpre (2020), Ni Lao (2021)

- Unsupervised Representation Learning for Web-Scale Document Retrieval (2021)
 Open-Domain Question Answering improvements through document-level representation learning. Explored phrase-level and contextualized exact methods to improve semantic retrieval.
- Pivot Through English: Reliably Answering Multilingual Questions without Document Retrieval (2020) Perform research experiments on the most effective, unified manner to reliably transfer knowledge from English question answering systems to lower resource languages by leveraging multilingual paraphrase detection.

Seattle Children's Research Institute

Advisor: Peter J. Myler, Mentor: Aakash Sur

• Recognizing Base J from Single Molecule Real Time (SMRT) Sequencing (2018)

Explore machine learning and signal processing methods to construct a genome-wide mapping of modified bases in infectious organisms from polymerase pauses during sequencing. Presented at the UW's 22nd Annual Undergraduate Research Symposium.

Awards, Fellowships, & Grants _

- 2020 John and JoAnne Wisniewski Endowed Scholarship, University of Washington
- 2019 Microsoft Endowed Scholarship, Microsoft
- 2018 Washington State Opportunity Scholarship, WSOS
- 2017 Paul G. Allen School Direct Admission, University of Washington Edward Jones Maple Valley Scholarship, Edward Jones Public School Employee Union Scholarship, Tahoma School District

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Seattle, WA Sept. 2018 - May 2020

Seattle, WA

Aug. 2019 - Sept. 2021

Seattle, WA Aug. 2019 - Present

Service_

- 2019 UW Research Computing Club, Undergraduate Liaison
- 2018 UW HCDE Alternative Spring Break, Instructor

2017 Washington Trails Association, Trail Maintenance Volunteer

Miscellaneous _____

• Languages: Native proficiency in English. Limited working proficiency in Chinese and Spanish.

Seattle, WA Neah Bay, WA Seattle, WA